

Surfactants for Pesticide Spraying – They are Different

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When working with pesticides, herbicides, insecticides and other applications there are physical and environmental factors that may suppress their effectiveness.

Using adjuvants with spray applications has proven to (a) improve or otherwise facilitate the physical handling characteristics of a pesticide spray; (b) improve performance effectiveness and consistency of sprayables; and (c) legally comply with the labeled use requirements of pesticides. Many factors that limit spray performance can be alleviated or managed with specific adjuvant products.

Adjuvants is the broad term that covers all types of products to help with spray applications which include, surfactants, penetrating surfactants, stickers, water conditioning agents, nitrogen and basic N blend products, drift control products, acidification agents, compatibility agents, anti-foam agents, tanks cleaners and others.

This article will discuss the use of surfactants for herbicide/insecticide spraying.

“NOT” all surfactants are created equal; they range in price from \$9.00-\$10.00 per gallon on the low end and from \$24.00-\$70.00 per gallon on the high end. Typically, surfactants have specific qualities that change the effectiveness of various chemistries when added to the spray solution.

Cheaply priced surfactants in most all cases are overall not your best value. In many cases these surfactants are manufactured with high amounts of Isopropyl alcohol or Butyl alcohol which makes them less expensive to manufacture but causes problems such as drying out faster on leaf surface (reducing uptake), excessive atomization (causing more fines and drift), storage problems (flammability issues).

Surfactants that are a spreader and penetrator type are manufactured from glycols (heavy molecular weight alcohols), tall oil fatty acids and methyl esters of fatty acids. These surfactants are more costly to manufacture but will:

1. Enhance uptake of pesticides into plants (dry slower on leaf surface).
2. Help with droplet deposition (maintaining droplet sizes, reducing fines and drift).
3. Enhance spreading of spray droplet on the leaf surface.
4. No storage problems because glycol alcohols are non-flammable.
5. Designed to help products to be more effective and actually help to buffer, change or manipulate the water to make it a more compatible carrier for the pesticide.
6. In many cases will be a neutral pH formulation.

In most cases spreader and penetrator type surfactants will cost between \$18.00-\$26.00 per gallon and the silicone type surfactants sell as high as \$70.00 per gallon.

When shopping for a surfactant to add with your pesticide the pesticide cost must first be considered. Pesticide pricing is **“NOT”** really getting any less expensive. New pesticide products are coming out with much smaller use rates per acre which actually make the product more expensive. Consider the loss of performance and potential waste of the pesticide when using inexpensive high in isopropyl or butyl alcohol surfactants. Thing to consider:

1. Is the pesticide reaching the spray target?
2. Is the pesticide drying too quickly for good uptake?
3. Is the higher rate of alcohol reacting poorly with the pesticide?

Look for a surfactant or penetrating surfactant that may be matched to the products you are using; (example) glyphosates, 2,4-Ds, picloram, dicamba and products like these work better with a surfactant that not only spreads but helps to acidify the waters and reduces water pH **but**, if you use this type of surfactant with SU chemistry (Alley, Cimarron, Escort XP, MSM, Chaparral and other SU chemistries) then this will start to reduce the active ingredient of these products more quickly.

Generally, if looking for a non-ionic surfactant or penetrating surfactant (which is what many products will call for on the labels) then look for a product that **“IS NOT”** high in isopropyl or butyl alcohol, is a good 90/10 or 100% formulation, that helps to control drift, helps with droplet adhesion, is low foaming, enhances uptake into the plant, and pH neutral formulations, these will generally cost you more but the benefits will pay for themselves.

Remember: **The cheap surfactant may cost you more in the long run!**